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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,294	09/27/2001	Oleg D. Lavrentovich	KSU.P202	5056

26360 7590 09/04/2003

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AKRON, OH 44308

EXAMINER

SEFER, AHMED N

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 09/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/966,294

Applicant(s)

LAVRETOVICH ET AL.

Examiner

A. Sefer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 7/24/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11, 12, 16 and 23 is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 13-15 and 17-22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## **DETAILED ACTION**

### ***Election/Restrictions***

1. The restriction requirement set forth in Paper No. 5 is withdrawn.

### ***Specification***

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

There is insufficient antecedent basis for the limitation “the director” recited in claim 1.

In claims 13-15, 17-20 and 22 the compound word “micro-patterns” should read “micro-structure”.

In claim 21, the compound word “micro-walls” should read “micro-structure”.

### ***Claim Objections***

The claims as presented are not numbered consecutively.

Misnumbered claims 22-24 have been renumbered 21, 22 and 23 respectively.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 and 6, 7, 9 and 10, as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Miyazaki et al. USPN 5,923,394.

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Miyazaki et al disclose (see figs. 1-7 and col. 7, lines 6-25) a liquid crystal device comprising a pair of opposed substrates 12a having a gap therebetween; a liquid crystal material 7 disposed in said gap; and a polymer micro-structures formed between said substrates, wherein the micro-structures affixed to said at least one of the substrate (as in claim 2) have a shape and spatial location determined by the director field of said liquid crystal material.

As for claims 3 and 4, Miyazaki et al disclose an alignment layer 4 or a polymer layer (as in claim 4) disposed on at least one of said substrate.

As for claims 6 and 7, Miyazaki et al disclose (see fig. 5 and col. 6, lines 45-54) an alignment layer producing a homogeneous tilted geometry or a homeotropic geometry of the director field (as in claim 7).

As for claims 9 and 10, Miyazaki et al disclose a smectic liquid crystal material and UV-curable prepolymer (as in claim 10).

5. Claims 1-7, 9 and 10, as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Molsen et al. (UK 2 329 481)

Molsen et al disclose (see figs. 7 and 8) a liquid crystal device comprising a pair of opposed substrates 12/13 having a gap therebetween; a liquid crystal material disposed in said gap; and a polymer micro-structures 27 formed between said substrates, wherein the micro-structures affixed to said at least one of the substrate (as in claim 2) have a shape and spatial location determined by the director field of said liquid crystal material.

As for claims 3 and 4, Molsen et al disclose an alignment layer 16 or a polymer layer (as in claim 4) disposed on at least one of said substrate.

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As for claims 5-7, Molsen et al disclose an alignment layer producing a homogeneous planar geometry, tilted geometry (as in claim 6) or a homeotropic geometry of the director field (as in claim 7).

As for claims 9 and 10, Molsen et al disclose a smectic liquid crystal material and UV-curable prepolymer (as in claim 10).

6. Claims 1-4 and 8, as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Li et al. 5,831,700,

Li et al disclose (see figs. 1 and 2 and col. 7, lines 35-45 and col. 9, lines 1-8) a liquid crystal device comprising a pair of opposed substrates 14/16 having a gap therebetween; a liquid crystal material disposed in said gap; and a polymer micro-structures 12 formed between said substrates, wherein the micro-structures affixed to said at least one of the substrate (as in claim 2) have a shape and spatial location determined by the director field of said liquid crystal material.

As for claims 3 and 4, Li et al disclose (col. 10, lines 54-60) an alignment layer (unnumbered) or a polymer layer (as in claim 4) disposed on at least one of said substrate.

As for claim 8, Li et al disclose (col. 8, lines 1-10) an alignment layer producing a patterned geometry of the director field with different alignment properties at different regions of the cell.

***Allowable Subject Matter***

7. Claims 11, 12, 16 and 23 are allowed.

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8. Claims 13-15 and 17-22 would be allowable if rewritten or amended to overcome the objection(s) set forth in this Office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (703) 605-1227.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601.

ANS

August 18, 2003

NATHAN J. FLYNN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

